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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,308	03/02/2005	Markus Ohnmacht	R.304253	3846

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EXAMINER

MCGRAW, TREVOR EDWIN

ART UNIT	PAPER NUMBER
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3752

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/526,308	Applicant(s) OHNMACHT ET AL.	
	Examiner Trevor McGraw	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 25,28,30,31,35,36,38,48,50 and 51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 25,28,30,31,35,36,38,48,50 and 51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner's Comment

Examiner acknowledges the cancellation of Claims 32-34.

Objection to Drawings

Examiner withdraws the objection held against the drawings under 37 CFR 1.83(a) in view of Applicant's amendment to the specification that deletes reference number "36—Jacket Lines".

Objection to Specification

Examiner withdraws the objection held against the specification in view of Applicant's preliminary amendment to paragraph 34 where reference number "11" is deleted and replaced by reference number "14" to designate the "injection opening" feature.

Rejection under 35 USC § 102

Applicant's arguments filed 10/10/2006 have been fully considered but they are not persuasive. Examiner brings to Applicant's attention that the Haeberer reference does in fact show and teach elongated grooves that extend beyond injection openings. Applicant is directed to Figures 4, 5 and 6 of Haeberer et al. (WO/02/01066) that clearly show elongated grooves. Applicant is further directed to Column 5, Lines 3-47 of Haeberer et al.

Rejection under 35 USC § 103

Applicant's arguments filed 10/10/2006 have been fully considered but they are not persuasive. Examiner brings to Applicant's attention that the Schorr et al. reference (WO/02/064969) shows and teaches grooves that are embodied at a depth of 1 to 50 µm, preferably 2 to 10 µm, which are results effective variables, i.e. a variable that achieves a recognized result and renders the present invention obvious over Haeberer et al. in view of Schorr et al.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25, 28, 30 and 48 are rejected under 35 U.S.C. 102(b) as being anticipated by Haeberer et al. (WO/02/01066).

In regard to claims 25, 28, 30 and 48 Haeberer et al. (WO/02/01066) teaches a fuel injection valve for an internal combustion engine where the valve comprises a valve body (1), a bore (3) defined on its end toward the combustions chamber by a conical valve seat (9), a piston valve needle (5) disposed longitudinally in the bore (3) with the valve needle (5) having a sealing face (30) that includes two conical faces (32) on its end toward the combustion chamber where one of the conical faces (32) is disposed on the combustion chamber side of the first conical face (30) where an annular groove (35)

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extends between the conical faces (32) where the end of the annular groove (35) faces away from the combustion chamber acting as a sealing edge upon contact of the valve sealing face (30) with the valve seat (9) and a plurality of recesses (55) embodied on the valve sealing face where the recesses (55) hydraulically connect the annular groove (35) with a portion of the second conical face (32) located on the combustion chamber side of the annular groove where the recesses (55) are embodied as a plurality of elongated grooves. Haeberer et al. also teaches a fuel injector where the grooves (55) begin in the same radial plane perpendicular to the valve needle (5) and intersect the annular groove (35) and extend in the direction of the combustion chamber and the end of the grooves (55) are located within the annular groove (35).

In regard the claim 48, the patentability of the product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product in the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 25, 28, 35, 36, 38, 48, 50 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haeberer et al. (WO/02/01066) in view of Schorr et al. (WO/02/064969). Although Haeberer et al. as described above teaches grooves (55) being affixed on a conical face of a valve body, it fails to teach the grooves being produced through a laser process at a microscopic depth less than 50 μm and a width between 5 μm to 50 μm where the depth of the grooves are from 1 to 10 times their width. However, Schorr et al. (WO/02/064969) recognizes that the size of the grooves is a results-effective variable, i.e. a variable that achieve a recognized result. In the instant case, the size of the grooves are a depth of less than 50 μm and a width between 5 μm and 50 μm where the depth of the grooves are from 1 to 10 times their width. Schorr et al. teaches To prevent the leak fuel flow from the pressure chamber 19 into the leak fuel chamber 15 from assuming excessively high values, the cross section of the recesses 30 must be kept relatively small. To achieve that, the recesses 30 have a depth of from 1 to 50 μm , preferably 2 to 10 μm . The width of the channel like recesses 30 is preferably from 100 to 500 μm , and the cross-sectional shapes of the recesses can for instance be rectangular, circular-segmental, triangular, or U-shaped.

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Beginning at the end of the sealing portion 105 toward the combustion chamber, the recesses extend over approximately one-half to approximately three-fourths of the length of the sealing portion 105. In this way, the leak fuel flow that flows through the recesses 30 and from there through the annular gap 17 to the inside of the leak fuel chamber 15 is kept within reasonable limits. Since the prior art recognizes this as a results-effective variable, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have chosen the size of the grooves to be at a microscopic depth less than 50 μm and a width between 5 μm to 50 μm where the depth of the grooves are from 1 to 10 times their width, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art (see MPEP 2144.05). In regard to claim 48, the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product in the prior art, the claim is unpatentable even though the prior product was made by a different process (see MPEP 2113).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trevor McGraw whose telephone number is (571) 272-7375. The examiner can normally be reached on Monday-Friday (2nd & 4th Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Shaver can be reached on (571) 272-4720. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Trevor McGraw
Art Unit 3752

TEM

KEVIN SHAVER
SUPERVISORY PATENT EXAMINER
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